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REMARKS

The Examiner subjected claims 1-28 to a restriction requirement. The Examiner stated the application contains claims directed to the following patentably distinct inventions:

I. Claims 1-20, drawn to a thermal interface material comprising a phase change polymer and a fusible filler material, classified in class 428, subclass 323.

II. Claims 21-24, drawn to a process of making a thermal interface material as well as the assembly, classified in class 428, subclass 673.

III. Claims 25-28, drawn to a process of using a thermal interface material to remove heat, classified in class 428, subclass 68.

The Examiner required Applicant under 35 U.S.C. §121 to restrict the application to one of the above inventions.

The Examiner indicated that during a telephone conversation on June 4, 2003, Applicant made a provisional election, with traverse, to prosecute the invention of Group 1, claims 1-20.

Applicant hereby affirms the above provisional election.

Claim Objections

The Examiner objected to claims 11, 15, and 16.

The Examiner stated on claim 11 at line 2, recitation of "by weight of the thermal interface material" should be changed to "by weight of the total weight of

the thermal interface material" to be consistent with the specific definition described in the specification.

Claim 11 has been amended accordingly.

The Examiner stated on claim 15 at line 2, recitation of "100-250° C" should be used since it is related to the degree of temperature.

Claim 15 has been cancelled.

The Examiner stated on claim 16 at line 2, recitation of "InGa SnBiZn" should be changed to "InGa, SnBiZ".

Claim 16 has been amended accordingly.

Applicant, accordingly, respectfully requests withdrawal of the objections to claims 11, 15, and 16.

35 U.S.C. § 102 Rejections

The Examiner has rejected claims 1-20 under 35 U.S.C. § 102(e) as being anticipated by Nguyen.

Claim 1 has been amended to include a metallic fusible filler material with a melting point between 100 and 250° C. Specifically, claim 1 includes the limitation "a metallic fusible filler material having a melting temperature approximately between 100 and 250° C."

Nguyen does not disclose a metal filler material with a melting point between 100 and 250° C. Nguyen discloses an interface material composition which comprises a rubber, such as a hydrocarbon rubber, phase change material, such as paraffin waxes oar polymer waxes, and at least one thermally conductive filler (Col. 2, lines 11-14). Saturated rubbers are preferred because they are less sensitive to thermal oxidation degradation (Col. 2, lines 16-19). Phase change materials comprise paraffin waxes or polymer waxes, or mixtures thereof (Col. 2, lines 17-28). Paraffin waxes are a mixture of solid hydrocarbons having melting points in the range of about 20° C to 100° C (Col. 2, lines 28-31). Polymer waxes are typically polyethylene waxes, polypropylene waxes, and have a range of melting points from about 40° C to 160° C (Col. 2, lines 32-34). Thermal filler particles dispersed in the phase change mixture preferably have a high thermal conductivity (Col. 4, lines 4-6). Suitable thermal materials include silver, aluminum, copper and alloys thereof, boron nitride, aluminum nitride, silver coated copper, silver coated aluminum, carbon fiber, metal coated carbon fiber such as nickel coated fiber, boron nitride in amounts of at least 20% by weight, and silver, copper, or aluminum in amounts of at least 50% by weight (Col. 4, lines 6-12). All of the thermal filler particles disclosed in Nguyen have melting points above 250° C. Nguyen thus discloses thermal filler particles having melting points above 2450° C. Specifically, Nguyen does not disclose a metal filler material with a melting point between 100 and 250° C.

Therefore, claim 1 is not anticipated by Nguyen because claim 1 includes a limitation not disclosed in Nguyen.

Claim 18 has been amended to include a phase change polymer binder with two fillers having different melting points. Specifically, claim 18 includes limitations "a phase change polymer binder," "a non-fusible particle filler having a melting temperature above a selected temperature," and "a fusible filler having a melting temperature below the selected temperature."

Nguyen does not disclose a phase change polymer binder with two fillers having different melting points. As illustrated in Table 1, the phase change compositions with thermal fillers of Nguyen include single composition thermal filler particles. Therefore, the thermal filler particles of Nguyen have only a single melting temperature. Nguyen thus discloses single composition thermal filler particles having a single melting temperature.

Therefore, claim 18 is not anticipated by Nguyen because claim 18 includes a limitation not disclosed in Nguyen.

Claims 2-14, 16, 17, 19, and 20 are dependent on either claim 1 or claim 18 and should be allowable for the same reasons as claims 1 and 18.

Claim 15 have been cancelled.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 1-14 and 16-20 under 35 U.S.C. § 102(e) as being anticipated by Nguyen.

The Examiner has rejected claims 1-4, 15, 17-18, and 20 under 35 U.S.C. § 102(b) as being anticipated by Salyer.

Claim 1 has been amended to include a metal filler material with a melting point between 100 and 250° C. Specifically, claim 1 includes the limitation "a metallic fusible filler material having a melting temperature approximately between 100 and 250° C. "

Salyer does not disclose a metal filler material with a melting point between 100 and 250° C. Salyer discloses a composite useful in thermal energy storage formed from crossedlinked polyethylene having a straight chain alkyl hydrocarbon incorporated therein as a phase change material (Col. 2, lines 29-33). No mention is made of metals with melting points between 100 and 250° C. Specifically, Salyer does not disclose a metal filler with a melting point between 100 and 250° C. Therefore, claim 1 is not anticipated by Salyer, because claim 1 includes a limitation that is not disclosed in Salyer.

Claim 18 has been amended to include a phase change polymer binder and two fillers with different melting points. Specifically, claim 18 includes the limitations "a phase change polymer binder," "a non-fusible particle filler having a melting temperature above a selected temperature," and "a fusible filler having a melting temperature below the selected temperature."

Salyer does not disclose a phase change polymer binder and two fillers with different melting points. Salyer, in this regard, discloses pellets that are useful in thermal energy storage which are formed from high density or low density polyethylene and have a straight chain crystalline alkyl hydrocarbon absorbed therein. (Col. 2, lines 41-45). The compositions of Salyer thus absorb the alkyl

hydrocarbons to create new compositions. The pellets of Salyer do not include filler materials. Specifically, Salyer does not disclose a phase change polymer binder and two fillers with different melting temperatures.

Therefore, claim 18 is not anticipated by Salyer because claim 18 includes a limitation not disclosed in Salyer.

Claims 2-4, 17, and 20 are dependent on either claim 1 or claim 18 and should be allowable for the same reasons as clams 1 and 18.

Claim 15 has been cancelled.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 1-4, 17, 18, and 20 under 35 U.S.C. § 102(b) as being anticipated by Salyer.

35 U.S.C. § 103 Rejections

The Examiner has rejected claims 5-14, 16, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Salyer in view of Nguyen.

Claims 5-14, 16, and 19 are dependent on either claim 1 or claim 18 and should be allowable for the same reasons as claims 1 and 18 stated above.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 5-14, 16, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Salyer in view of Nguyen.

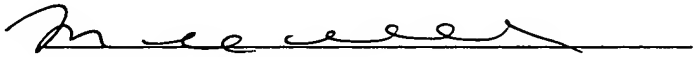
Applicant respectfully submits that the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Michael A. Bernadicou at (408) 720-8300.

Pursuant to 37 C.F.R. 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: January 21, 2004



Michael A. Bernadicou
Reg. No. 35,934

Customer No. 008791
12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA 90025-1030
(408) 720-8300